

Kidney)

"Starve"rs. Fed"

Insulin

to Epi (muscle)

to cause low blood sugar
(hypoglycemia)

→ NEED GLUCOSE

Stimulate:

1) glycogen catabolism
(glycogenolysis)

2) gluconeogenesis

3) glycolysis

Liver & muscle

Liver

Muscle

Goal:

Liver: ↑ Blood sugar level

Muscle: usage

⊕ cyclic AMP

⊕ protein kinase

↓ P_i

⊕ Ca^{2+} → phosphorylase kinase - P

↓ P_i

AMP ⊕ → glycogen phosphorylase - P
(active)

P_i → Glycogen Synthase - P
(inactive)

respond to
high blood sugar
(hyperglycemic)

→ tell/encourage glucose
uptake ↑
stimulate

1) glycogenesis (storage)
In liver & muscle

Goal: ↓ Blood sugar level
↓ cAMP

Insulin ⊖ → ↓ cAMP

↓ ⊕
phosphatase

Glycogen Synthase - P ↔ Glycogen Synthase
(inactive) ↔ (active)

modulation:

⊖ glucose

⊕ AMP (allosteric) on glycogen
phosphorylase

⊕ Ca^{2+} on

phosphorylase kinase